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WHAT IS CLAIMED IS:

1. A probe pin for testing electric characteristics of an apparatus, comprising:

a silicon pin core; and

a conductive layer covering an entire surface of the silicon pin core.

2. A probe pin for testing electric characteristics of an apparatus, comprising:

a silicon pin core having a tip, a side, and a bottom; and

a conductive layer covering the tip, the side, and the bottom of the silicon pin core.

3. The probe pin according to claim 2, wherein the silicon pin core has a metal silicide film at the bottom.

4. The probe pin according to claim 3, wherein the metal silicide has an alloy-forming temperature below an alloy-forming temperature of the conductive layer and silicon.

5. The probe pin according to claim 3, wherein the metal silicide is nickel silicide, platinum silicide, or lead silicide.

6. A probe assembly comprising:

a probe pin for testing electric characteristics of an apparatus, the probe pin comprising a silicon pin core and a conductive layer covering an entire surface of the silicon pin core, the probe pin having a tip and a bottom; and

an electrode positioned below and connected to the bottom of the probe pin.

7. The probe assembly according to claim 6, wherein the silicon pin core of the probe pin has a metal silicide film at a bottom thereof.

8. The probe assembly according to claim 7, wherein the metal silicide has an alloy-forming temperature below an alloy-forming temperature of the conductive layer and silicon.

9. The probe assembly according to claim 6, wherein the electrode is connected to the bottom of the probe pin by soldering.

10. The probe assembly according to claim 6, wherein the electrode is connected to the bottom of the probe pin using a bonding agent or a resin.

11. A probe card comprising:

one or more probe pins for testing electric characteristic of an apparatus, each probe pin comprising a silicon pin core and a conductive layer covering an entire surface of the silicon pin core, each probe pin having a tip and a bottom; and

a print wiring board having one or more electrodes, each electrode positioned below and connected to the bottom of a corresponding probe pin.

12. The probe card according to claim 11, wherein the silicon pin core has a metal silicide at a bottom thereof.

13. The probe card according to claim 11, wherein the electrode is connected to the bottom of the corresponding probe pin by soldering.

14. The probe card according to claim 11, wherein the electrode is connected to the bottom of the corresponding probe pin using a bonding agent or a resin.

15. The probe card according to claim 11, further comprising an insulating layer that fills a space among the probe pins with the tips of the probe pins projecting from a top surface of the insulating layer.

16. The probe card according to claim 11, wherein the print wiring board has interconnections connected to the bottoms of the electrodes and extending inside the print wiring board.

17. A method for fabricating a probe pin, comprising the steps of:

forming silicon pins rising in the vertical direction by crystal growth, each silicon pin having a tip, a side, and a bottom;

coating the tip and the side of each silicon pin with a first metal;

forming an insulating layer filling up a space between the silicon pins to fix the silicon pins so that the tips of the silicon pins project from a top face of the insulating layer and that a bottom face of the insulating layer aligns with the bottoms of the silicon pins;

covering the bottom face of the insulating layer and the bottoms of the silicon pins with a second metal;

heating the silicon pins, the insulating layer, and the first and second metals all together at a temperature above an alloy-forming temperature of silicon and the second metal and below an alloy-forming temperature of silicon and the first metal;

removing a non-reacted second metal that has not been reacted with the silicon pins during the heating step; and

forming a third metal on the bottoms of the silicon pins, from which the non-reacted second metal has been removed.

18. The method according to claim 17, wherein the silicon pins are formed on a silicon substrate, and the silicon substrate is removed after the insulating layer is formed.

19. The method according to claim 16, further comprising the step of connecting the bottoms of the silicon pins covered with the third metal to electrodes placed in a print board by one-to-one correspondence

20. A method for fabricating a probe pin, comprising the steps of:

forming silicon pins rising in the vertical direction by crystal growth, each silicon pin having a tip, a side, and a bottom;

coating the tip and the side of each silicon pin with a first metal;

forming an insulating layer filling a space between the silicon pins to fix the silicon pins in such a manner that the tips of the silicon pins project from a top face of the insulating layer;

forming a recess at the bottom of each silicon pin; and

covering the recesses and the bottom face of the insulating layer with a third metal.

21. The method according to claim 20, further comprising the step of removing the third metal from the bottom face of the insulating layer, while leaving the third metal inside the recesses.

22. The method according to claim 20, wherein the silicon pins are formed on a silicon substrate, and the silicon substrate is removed after the insulating layer is formed.

23. The method according to any one of claim 20, further comprising the step of connecting the bottoms of the silicon pins covered with the third metal onto electrodes placed in a print board by one-to-one correspondence.